

### ABSTRACT OF THE DISCLOSURE

5 A method and apparatus for controlling power in a wireless communication system is described. A base station and a Multiple Carrier Power Amplifier (MCPA) are split into at least two separate and an interface. An aggregate signal  
10 represents carrier signals from mobile stations served by the base station. MCPA gain level is adjusted to maintain a linear transmit power, measured during an interval, and related information fed back across the interface to the base station. A first and second control parameter such as power averaging period and sampling interval are provided from the base station to control the measuring of the gain.  
15 The interface may be digital and providing feedback includes defining a 100% load level associated with the MCPA and feeding back information proportional to the measured gain level. The interval parameter may correspond to a synchronous interval, asynchronous, a time slot interval or irregular interval. A plurality of base stations may further be supported by one MCPA using several interfaces. A  
20 linear transmit power level may be maintained by maintaining a power level associated with a control channel and autonomously adjusting second power levels associated with remaining signals in the aggregate signal, or second power levels may be prioritized and adjusted according to priority. To improve quality, a higher priority is assigned to relatively low powered remaining signals.  
Alternatively, control channel power level may be maintained, while receiving priorities over the interface from the base station to the MCPA and adjusting the one or more second power levels based on received priority.